Title : *Capstone Project IBM Cognos Analytics*

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Introduction to the Project

Content:

- **Objective**: Create interactive dashboards using IBM Cognos Analytics to visualize survey data from **survey_data_updated.csv**.
- **Focus Areas**: Technology Usage, Future Technology Trends, and Demographics.
- **Tools Used**: IBM Cognos Analytics for data visualization and analysis.
- **Discussion**
- **Conclusion**
- **Job Postings Module 1**
- **Popular Language Module 1**

The data is based on a global survey of developers, focusing on their technology preferences and demographics.

EXECUTIVE SUMMARY

The project is structured around three interactive dashboards designed to provide comprehensive insights into technology usage, future trends, and respondent demographics. Each dashboard utilizes a **2 x 2 rectangle areas tabbed template** in IBM Cognos Analytics to organize and display key metrics across multiple panels.

1. **Current Technology Usage**:
    1. This dashboard focuses on the current tools, languages, platforms, and databases used by developers. The key metrics are presented in visualizations such as bar charts, column charts, word clouds, and hierarchy bubble charts.
2. **Future Technology Trends**:
    1. The second dashboard projects future technology trends, offering insights into the languages, platforms, databases, and frameworks that are anticipated to rise in popularity. This dashboard highlights emerging technologies through similar chart types, with an emphasis on predicting industry movements.
3. **Demographics**:
    1. The final dashboard visualizes respondent demographics, including age distribution, education levels, and geographic locations. Using pie charts, map charts, line charts, and stacked bar charts, this dashboard highlights key demographic patterns and their correlation to technology adoption.

Each dashboard is designed to be visually engaging, providing an intuitive experience to interact with and gain insights from the survey data.

INTRODUCTION

1. Dashboard Tabs:

- **Current Technology Usage**
  - Visualizes the technology stack currently used by developers, including programming languages, databases, platforms, and frameworks.
- **Future Technology Trends**
  - Predicts the emerging technologies and trends expected to gain popularity in the future, such as new programming languages, databases, and frameworks.
- **Demographics**
  - Provides insights into the demographic data of the survey respondents, including age, country, education level, and other key factors.

2. Visual Layout:

- Each dashboard is structured using the 2 x 2 rectangle areas tabbed template in IBM Cognos Analytics.
- This layout includes four distinct panels within each tab, each presenting a specific visualization, providing an organized view of key metrics.

3. Purpose:

- The primary goal of these dashboards is to display and analyze key metrics related to technology usage, predict future technology trends, and visualize respondent demographics.

Methodology

1. Data Collection

Dataset used: *survey_data_updated.csv*

Source: The dataset contains responses from developers worldwide regarding their technology preferences and demographics.

2. Data Preparation

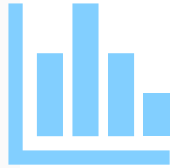
Exploration and Cleaning:

Checked for null values and missing data.

Categorized and filtered data to focus on relevant metrics.

Transformations:

Aggregated data fields (e.g., calculated top 10 technologies by count).



3. Dashboard Design in IBM Cognos Analytics

Visualization Approach:

Used the **2 x 2 rectangle areas tabbed template** for consistent layout.

Mapped key metrics to various visualizations (bar charts, pie charts, word clouds, etc.).

4. Filters and Fields:

Applied filters to isolate top 10 items for languages, databases, and platforms.

Mapped color, size, and other fields to automatically calculated counts and data segments.

5. Iterative Development

Refined visualizations to ensure clarity and relevance.

Reviewed each tab (Current Technology Usage, Future Technology Trends, and Demographics) to ensure insights are actionable.

5. Finalization and Insights

Enhanced dashboards with titles, labels, and interactive features.

Derived key insights for analysis, including technology trends and demographic breakdowns.

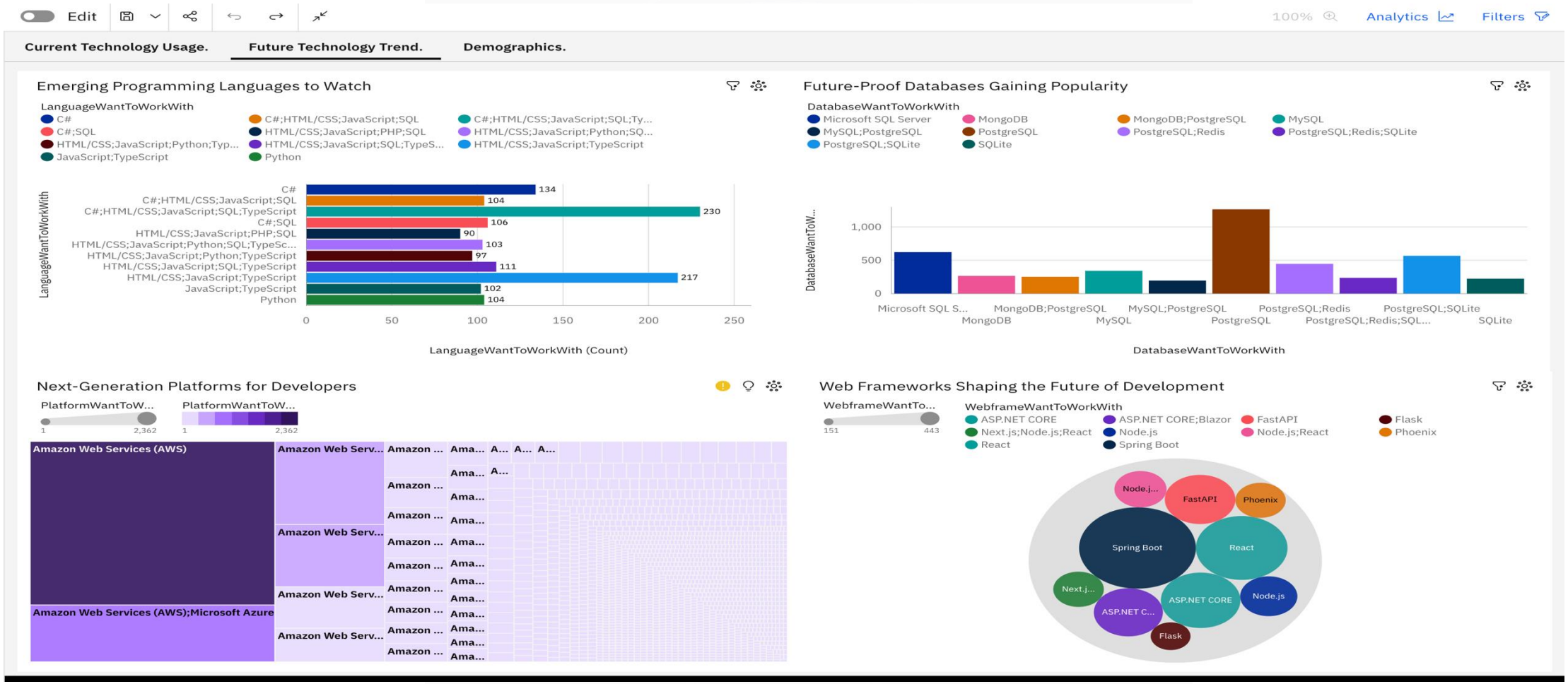
DASHBOARD

Dashboard Tabs:

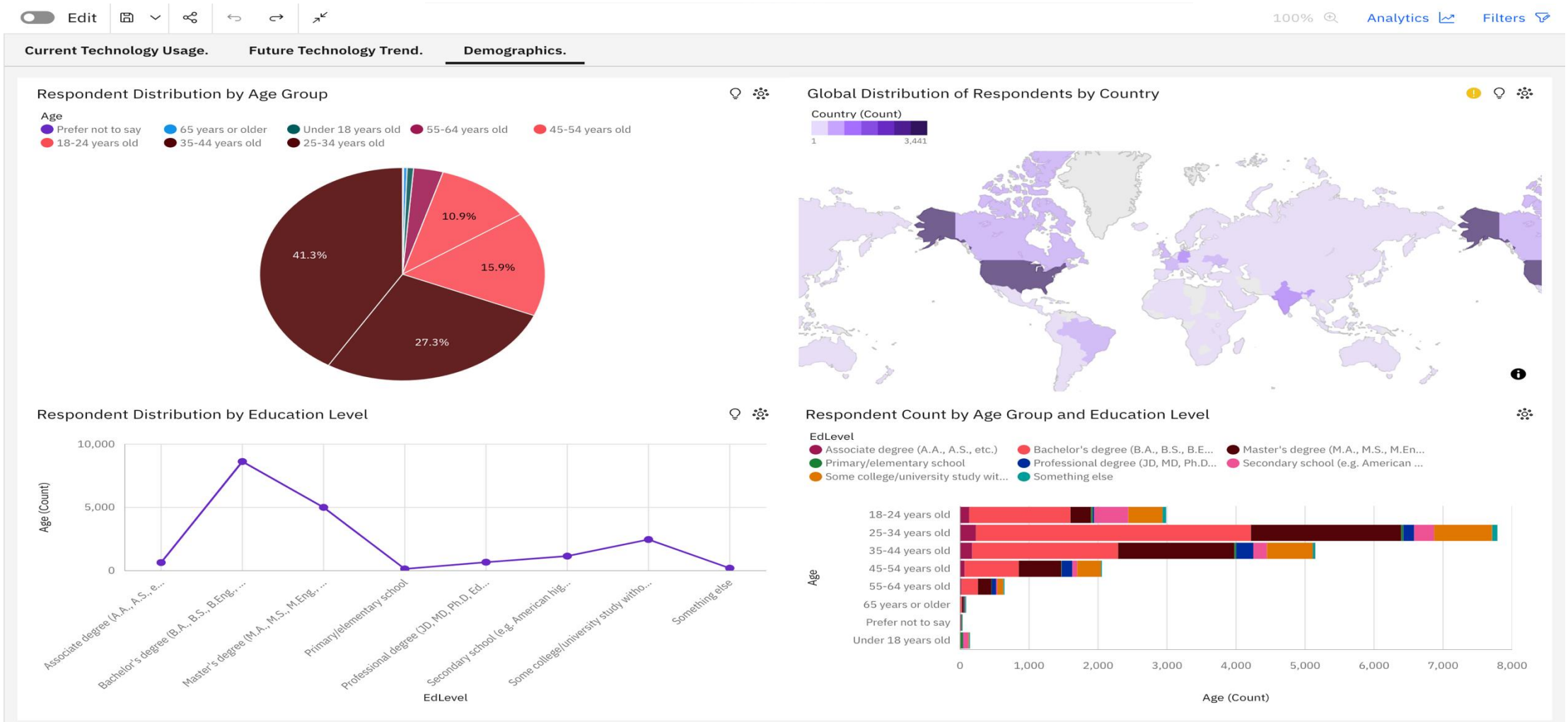
- **Current Technology Usage**
  - Visualizes the technology stack currently used by developers, including programming languages, databases, platforms, and frameworks.
- **Future Technology Trends**
  - Predicts the emerging technologies and trends expected to gain popularity in the future, such as new programming languages, databases, and frameworks.
- **Demographics**
  - Provides insights into the demographic data of the survey respondents, including age, country, education level, and other key factors.

Current Technology Usage

Future Technology Trends



Demographics



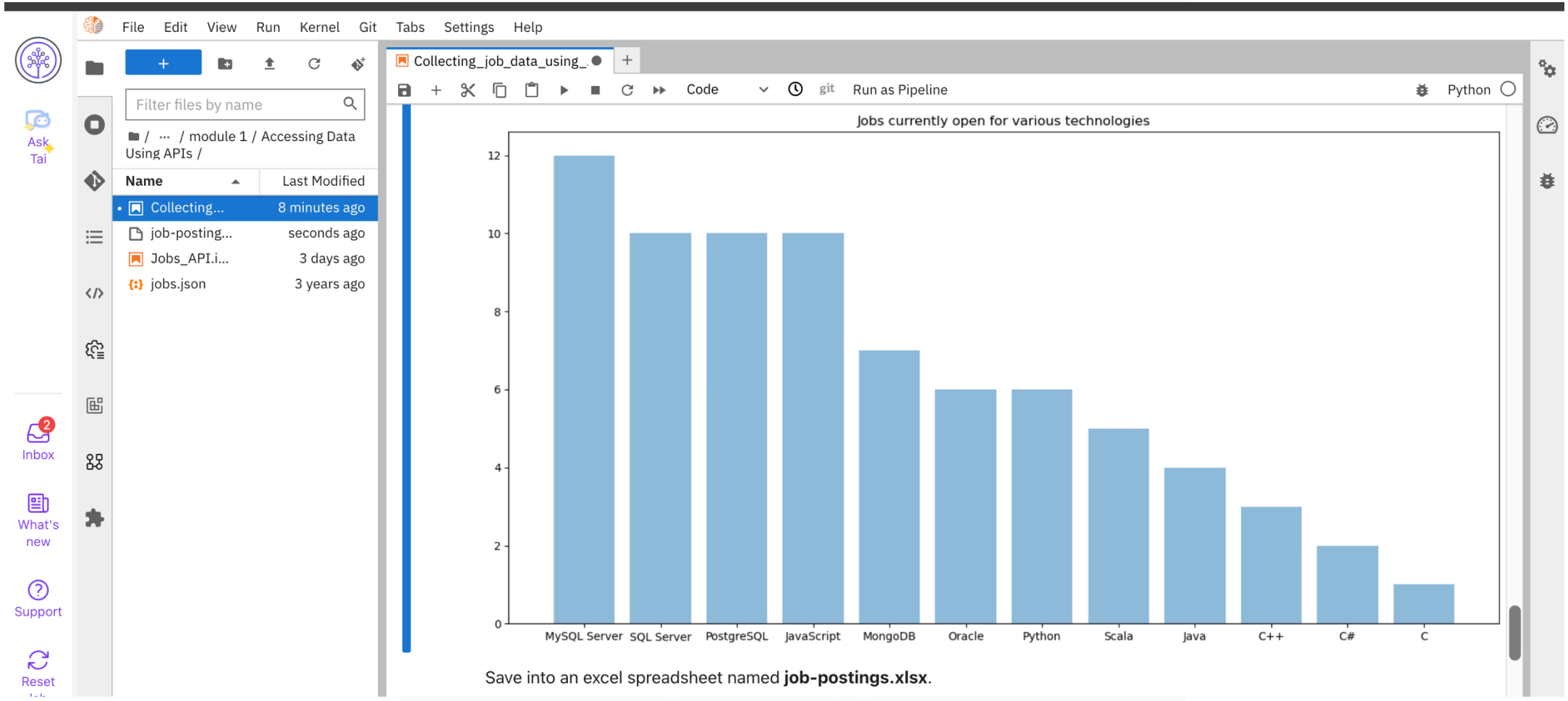
DISCUSSION

- The analysis highlights the dominance of languages like **JavaScript**, **Python**, and **Java**, reflecting their versatility and widespread industry adoption. **JavaScript** remains essential for front-end and full-stack development, while **Python** leads in AI and data science applications.
- Emerging interest in **TypeScript** underscores the need for scalable and maintainable JavaScript projects. Meanwhile, **PHP** and **C#** maintain relevance in web development and enterprise/gaming solutions, respectively.
- Organizations must align hiring and tech investments with these trends, focusing on emerging languages like **TypeScript** for future-proofing. Developers should prioritize upskilling in modern frameworks and tools tied to these languages to remain competitive in the evolving tech landscape.

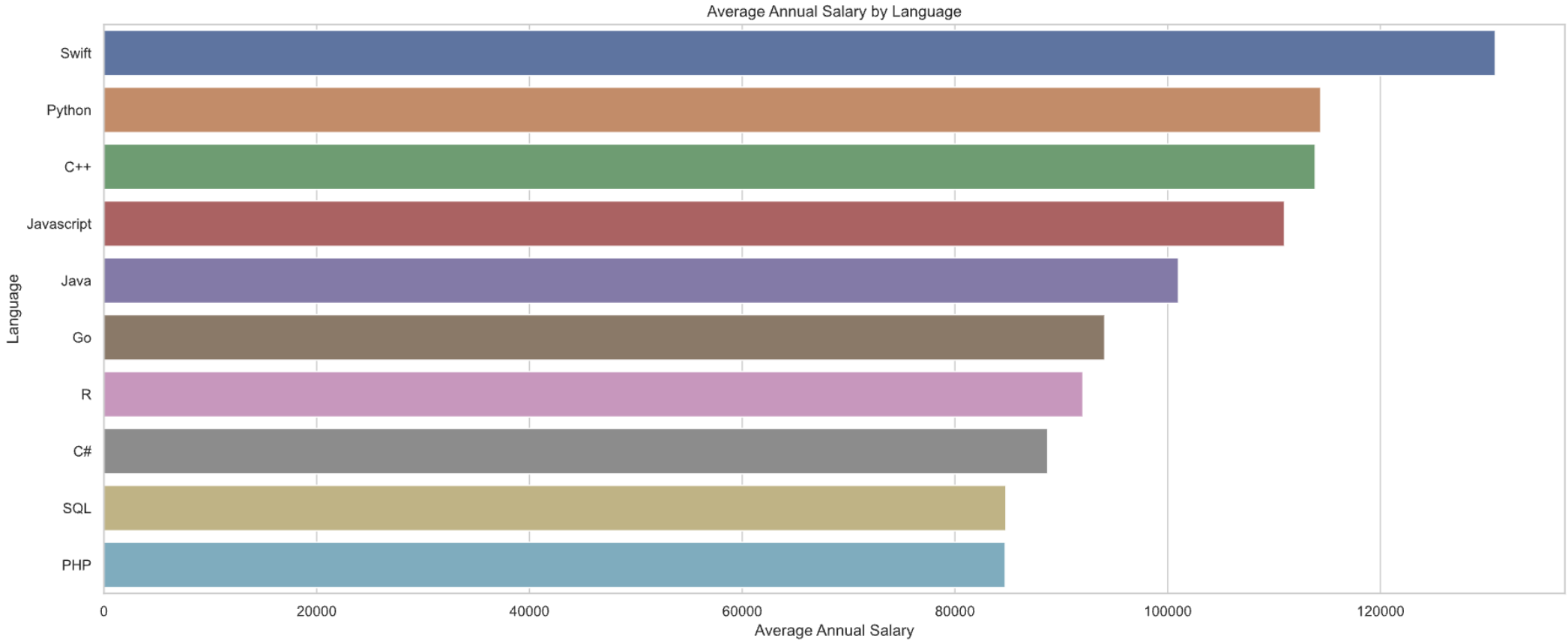
CONCLUSION

- The analysis of programming language trends reveals a dynamic landscape where languages like **JavaScript**, **Python**, and **Java** dominate due to their versatility and broad application across industries.
- Emerging languages such as **TypeScript** and **Go** highlight the shift toward scalable, efficient, and modern development practices, while legacy languages like **PHP** and **C#** maintain their niche relevance.
- For developers, staying competitive requires continuous upskilling in trending languages and frameworks.
- Organizations must strategically align their technology stacks and talent acquisition efforts to leverage these trends, ensuring adaptability and innovation in an ever-evolving industry.
- By doing so, both developers and businesses can position themselves for long-term success.

JOB POSTINGS



POPULAR LANGUAGES



Save the scrapped data into a file named *popular_languages.csv*